



## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 03-F-044PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/JP2003/012982	International filing date (day/month/year) 09 October 2003 (09.10.2003)	Priority date (day/month/year) 20 November 2002 (20.11.2002)	
International Patent Classification (IPC) or national classification and IPC C12N 9/16, 15/55			
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>1</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input checked="" type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) <u>1 DISC</u>, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p> <input checked="" type="checkbox"/> Box No. I Basis of the report  <input type="checkbox"/> Box No. II Priority  <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input type="checkbox"/> Box No. VI Certain documents cited  <input type="checkbox"/> Box No. VII Certain defects in the international application  <input type="checkbox"/> Box No. VIII Certain observations on the international application     </p>
--

Date of submission of the demand 13 February 2004 (13.02.2004)	Date of completion of this report 26 May 2004 (26.05.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/012982

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:

international search (under Rules 12.3 and 23.1(b))  
 publication of the international application (under Rule 12.4)  
 international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

The international application as originally filed/furnished

the description:  
 pages \_\_\_\_\_ 1-14, as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the claims:  
 pages \_\_\_\_\_ 7, 9-10, as originally filed/furnished  
 pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19  
 pages\* \_\_\_\_\_ 1, 6, 8 received by this Authority on 17 May 2004 (17.05.2004)  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the drawings:  
 pages \_\_\_\_\_ 1-4, as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_ 2-5  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to sequence listing (specify): \_\_\_\_\_

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.

PCT/JP2003/012982

**Supplemental Box Relating to Sequence Listing****Continuation of Box No. 1, item 2:**

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this report was established on the basis that of:

## a. type of material

a sequence listing  
 table(s) related to the sequence listing

## b. format of material

in written format  
 in computer readable form

## c. time of filing/furnishing

contained in the international application as filed  
 filed together with the international application in computer readable form  
 furnished subsequently to this Authority for the purpose of search and/or examination  
 received by this Authority as an amendment\* on \_\_\_\_\_

2.  In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

\* If item 4 in Box No. 1 applies, the listing and /or table(s) related thereto, which form part of the basis of the report, may be marked "superseded".

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP 03/12982

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1, 6-10	YES
	Claims		NO
Inventive step (IS)	Claims	1, 6-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1, 6-10	YES
	Claims		NO

## 2. Citations and explanations

Document 1: J. Biol. Chem., 1990, 265 (35), pp. 21946 to 21950

Document 2: J. Biol. Chem., 1994, 269 (16), pp. 12248 to 12253

Document 3: J. Biol. Chem., 1998, 273 (32), pp. 20504 to 20510

Document 4: J. Biol. Chem., 2000, 275 (18), pp. 13955 to 13961

Document 5: J. Biol. Chem., 1998, 273 (31), pp. 19375 to 19377

Document 6: Nature, 1997, 386 (6622), pp. 299 to 302

The invention that is set forth in claims 1 and 6 to 10 involves an inventive step in relation to documents 1 to 6.

Documents 1 to 6 do not disclose V<sub>1</sub>-ATPases that include at least one substitution from among the substitution of an Ala residue group for the Ser residue group in position 232 of SEQ ID NO: 3 and the substitution of a Ser residue group for the Thr residue group in position 235 of SEQ ID NO: 3; furthermore, even a person skilled in the art could not easily have conceived of such a feature in the light of the disclosures of documents 1 to 6.